tudes. Reply to some criticisms of M. Rateau on an earlier communication.—E. **Brylinski**: The transport of electrical energy to great distances. A mathematical discussion of the properties of a half-wave line.—S. **Posternak**: The variations of the composition of ammonium phosphomolybdate. An account of the variations in the composition of the precipitate produced by the presence of ammonium nitrate or sulphate in the liquid in which the precipitate is formed.—F. **Bourion**: The analysis of commercial chlorobenzenes by distillation. The substances present in the commercial product are benzene, monochlorobenzene, and higher chlorination products boiling at 80° C., 130° C., and 172° C. or above. A scheme for systematic fractional distillation is given, with results for synthetic mixtures. The method is a lengthy one, a single sample requiring three and a half days for analysis.—G. **Mignonac**: The ketimines. Formation by the catalytic reduction of the oximes. The reaction was carried out with nickel (reduced from its oxide at 300° C.) in absolute alcohol at ordinary atmospheric pressure at a temperature of about 16° C. The oxime of *cyclo*hexanone gave N-*cyclo*hexylketimine, a substance not previously isolated, and the corresponding ketimines were isolated from the reduction products of the oximes of acetophenone, propiophenone, benzophenone, and phenyl-α-naphthyl ketone.—Mlle. S. **Veil**: Alloys of oxides. Mixtures of the oxides of chromium and cerium were compressed and heated, and measurements made of the electrical conductivity and magnetisation coefficient of the products. Diagrams are given showing the results for varying proportions of the two oxides.—C. **Matignon** and J. A. **Lecanu**: The reversible oxidation of arsenious acid. From the thermochemical data it should be possible directly to oxidise arsenic trioxide to the pentoxide, and experiments were carried out at temperatures between 400° C. and 450° C., the pressures of the oxygen being 130, 127, and 138 atmospheres. The production of the pentoxide was proved, but the oxidation of the arsenic trioxide was not complete.—Ch. **Gorceix**: The formation of the first ocean.—R. **Souèges**: The embryogeny of the Œnotheraceæ. Development of the embryo in *Oenothera biennis*.—M. **Moilliard**: The influence of a small quantity of potassium on the physiological characters of *Sterigmatocystis nigra*. Potassium has a marked specific action on the development of this mould. Deficiency of potassium causes the glucose in the culture fluid to disappear more rapidly than the lævulose; conidia and black pigment do not appear as usual; a golden-yellow pigment appears in the fluid, and a soluble substance stained blue by iodine is formed.—G. **Bertrand**: The conditions which may modify the activity of chloropicrin towards the higher plants. The effects of chloropicrin are nearly proportional to the concentration of the vapour and the time of action. Moisture and light, except direct sunlight, are without influence.—M. **Baudouin**: An anatomical measurement permitting the diagnosis of sex in the human skull.—L. **Boutan**: Comparative yields of pelagic apparatus.—P. **Wintrebert**: The propagation of the undulating movement of the muscles of the skeleton in advanced embryos of *Scylliorhinus canicula* after section or partial resection of the spinal cord.—P. **Portier**: The rabbit deprived of its cæcal appendix regenerates this organ by differentiation of the extremity of the cæcum. When the rabbit's appendix is removed the terminal portion of the cæcum is modified, becomes infiltrated with lymphocytes, and regenerates a new appendix possessing the essential histological and physiological characters of the normal appendix. This is a proof of the important function of this organ in the rabbit.—Ch. **Porcher**: Lacteal retention.—M. **Doyon**: The anticoagulating and hæmolysing action of sodium nucleinate.—P. **Courmont** and A. **Rochain**: The action of the micro-organisms of sewage effluents purified by the activated-sludge method on albuminoid materials, urea, and nitrates.—E. **Aubel**: The sterilising power of acids.

Books Received.

School Dynamics. By W. G. Borchardt. Part i. (with Answers.) Pp. vii+286+xix. (London: Rivingtons.) 3*s.* 6*d.*

Space and Time in Contemporary Physics. By Prof. M. Schlick. Rendered into English by H. L. Brose. Pp. xi+89. (Oxford: At the Clarendon Press.) 6*s.* 6*d.* net.

Zoölogy: A Text-book for Colleges and Universities. By Prof. T. D. A. Cockerell. Pp. xi+558. (Yonkers-on-Hudson, New York: World Book Co.) 3 dollars.

An Introduction to Palæontology. By Dr. A. M. Davies. Pp. xi+414. (London: T. Murby and Co.) 12*s.* 6*d.* net.

Practical Plant Biochemistry. By M. W. Onslow. Pp. vii+178. (Cambridge: At the University Press.) 15*s.* net.

Wild Fruits and How to Know Them. By Dr. S. C. Johnson. Pp. xi+132. (London: Holden and Hardingham, Ltd.) 1*s.* net.

Aluminium: Its Manufacture, Manipulation, and Marketing. By G. Mortimer. (London: Sir Isaac Pitman and Sons, Ltd.) 2*s.* 6*d.* net.

Cotton Spinning. By W. Scott Taggart. Vol. iii. Fifth edition. Pp. xxviii+490. (London: Macmillan and Co., Ltd.) 10*s.* net.

Diary of Societies.

THURSDAY, May 13.

Royal Institution of Great Britain, at 3.—A. P. Graves: Welsh and Irish Folk Song.

Royal Society, at 4.—Election of Fellows.—4.30.—Dr. A. D. Waller: Demonstration of the Apparent "Growth" of Plants (and of Inanimate Materials) and of their Apparent "Contractility."—W. N. F. Woodland: The "Renal Portal" System (Renal Venous Meshwork) and Kidney Excretion in Vertebrata.

London Mathematical Society, at 5.—H. W. Richmond: (1) Historical Note on some Canonical Forms quoted by Mr. Wakeford. (2) Historical Note on Cayley's Theorems on the Intersections of Algebraic Curves.—T. Stuart: The Lowest Parametric Solutions of a Dimorph Sextan Equation in the Rational, Irrational, and Complex Fields.—A. E. Jolliffe: The Pascal Lines of a Hexagon.

Institution of Electrical Engineers (at Institution of Civil Engineers) at 6.—S. Evershed: Permanent Magnets in Theory and Practice.

Institute of Inventors (at Royal Society of Arts), at 7.30.—D. Leechman and Others: Discussion on The Relations of the Inventor to the State.

Optical Society, at 7.30.

Institution of Automobile Engineers (Graduates' Section) (at 28 Victoria Street). at 8.—W. E. Benbow: The Chemical and Physical Properties of Iron and Steel.

Royal Society of Medicine (Neurology Section), at 8.30.—Annual General Meeting.—Dr. S. A. K. Wilson: Decerebrate Rigidity in Man, and the Occurrence of Tonic Fits.

FRIDAY, May 14.

Department of Scientific and Industrial Research. Conference of Research Organisations (at Institution of Civil Engineers), at 3.—Marquess of Crewe: Introductory Address.—Dr. A. W. Crossley: The Relation of Research Associations to Existing Institutions for Research.—J. W. Williamson: The Staffing of Research Associations: Salaries and Superannuation.

Royal Astronomical Society, at 5.

Physical Society of London, at 5.—Dr. F. Lloyd Hopwood: Demonstration of Experiments on the Thermionic Properties of Hot Filaments.—G. D. West: A Modified Theory of the Crookes Radiometer.—A. Campbell: The Magnetic Properties of Silicon-Iron (Stalloy) in Alternating Fields of Low Value.—T. Smith: Tracing Rays through an Optical System.

© 1920 Nature Publishing Group

ROYAL SOCIETY OF MEDICINE (Clinical Section), at 5.30.—Annual General Meeting.

MALACOLOGICAL SOCIETY OF LONDON (at Linnean Society), at 6.

INSTITUTION OF ELECTRICAL ENGINEERS (Students' Meeting) (at King's College), at 7.—E. G. Humfress: Electrical Motor Control Devices.—The Meeting will be preceded by the Annual General Meeting.

JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—Hon. H. Fletcher Moulton and Others: Discussion on The Business Aspect of the Peace Treaty.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE (at 11 Chandos Street, W.1), at 8.30.—Dr. E. J. Wood: A Consideration of Pellagra from the Standpoint of a "Deficiency Disease."

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Prof. Karl Pearson: Sidelights on the Evolution of Man.

SATURDAY, MAY 15.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Frederic Harrison: A Philosophical Synthesis as proposed by Auguste Comte.

MONDAY, MAY 17.

VICTORIA INSTITUTE (at Central Hall, Westminster), at 4.30.—Bishop G. Forrest Browne: Monumental Art in Early England, Caledonia, and Ireland.

ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.—B. J. Lubschez: The Two Great Railway Stations of New York.

ROYAL SOCIETY OF ARTS, at 8.—A. T. Bolton: The Decoration and Architecture of Robert Adam and Sir John Soane, 1758-1837 (Cantor Lectures).

ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 8.30.—Capt. F. Kingdon Ward: The Valleys of Kham.

TUESDAY, MAY 18.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. A. Keith: British Ethnology: The Invaders of England.

ROYAL SOCIETY OF MEDICINE, at 5.—General Meeting.

ROYAL STATISTICAL SOCIETY, at 5.15.—Y. B. Guild: Variations in the Numbers of Livestock and in the Production of Meat in the United Kingdom during the War.

INSTITUTION OF PETROLEUM TECHNOLOGISTS (at Royal Society of Arts), at 5.30.—R. Stirling: Air Lift System of Pumping Oil Wells.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN (Lantern Meeting), at 7.—A. C. Vowles: Wanderings in Mesopotamia (Babylon).

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.15.—Sir Henry Howorth: Buddhism in the Pacific.

WEDNESDAY, MAY 19.

SOCIETY OF GLASS TECHNOLOGY (at Institute of Chemistry), at 2.—C. J. Peddle and Others: Discussion on The Physical Properties of Glass.—C. J. Peddle: The Development of Various Types of Glass. Part i.: The Interaction of Silica with the Oxides of Sodium and Potassium. Part ii.: The Interaction of Silica, Lime, and Sodium Oxide. Part iii.: The Interaction of Silica, Lime, and Potassium Oxide. Part iv.: The Interaction of Silica, Lime, and the Oxides of Sodium and Potassium. Part v.: A Comparison of the Soda-Lime-Silica and the Potash-Lime-Silica Glasses.—Dr. M. W. Travers: A Surface Effect in Glass, Probably Caused by Re-heating.—S. English and Dr. W. E. S. Turner: The Thermal Expansion of Magnesia-containing Glasses.—J. R. Clarke and Dr. W. E. S. Turner: The Optical Properties of Some Lime-Soda Glasses.—S. English and Dr. W. E. S. Turner: The Annealing Temperatures of Soda-Lime and Soda-Magnesia Glasses.—J. D. Cauwood, J. R. Clarke, Miss C. M. M. Muirhead, and Dr. W. E. S. Turner: The Durability of Lime-Soda Glasses.—J. R. Clarke and Dr. W. E. S. Turner: The Influence of Lime on the Value of Young's Modulus of Elasticity for the Lime-Soda Glasses.—S. English and Dr. W. E. S. Turner: The Density of Soda-Magnesia Glasses and a Comparison with that of the Soda-Lime Glasses.

ROYAL SOCIETY OF ARTS, at 4.30.—J. S. Highfield, Dr. W. R. Ormandy, and D. Northall-Laurie: The Commercial Applications of Electrical Osmosis.

ROYAL SOCIETY OF MEDICINE (History of Medicine Section), at 5.—Annual General Meeting.—Dr. Withington: The Medical Terms in Liddell and Scott.

ROYAL METEOROLOGICAL SOCIETY, at 5.—Dr. Griffith Taylor: Agricultural Climatology of Australia.—J. E. Clark and H. B. Adames: Report on the Phenological Observations for 1919.

GEOLOGICAL SOCIETY OF LONDON, at 5.30.—Dr. H. H. Thomas: Certain Xenolithic Tertiary Minor Intrusions in the Island of Mull (Argyllshire).

ROYAL MICROSCOPICAL SOCIETY, at 8.—Annual Exhibition of Microscopic Pond Life.

THURSDAY, MAY 20.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—A. P. Graves: Welsh and Irish Folk Song.

ROYAL SOCIETY, at 4.30.—*Probable Papers.*—Prof. J. N. Collie: Some Notes on Krypton and Xenon.—Sih Ling Ting: Experiments on Electron Emission from Hot Bodies, with a Preface by Prof. O. W. Richardson.—Dr. L. Silberstein: The Aspherical Nucleus Theory Applied to the Balmer Series of Hydrogen.—Dr. T. E. Stanton, Miss D. Marshall, and Mrs. C. N. Bryant: The Conditions at the Boundary of a Fluid in Turbulent Motion.

ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—Brig.-Gen. Lord Montagu of Beaulieu: Roads and Transport in India.

ROYAL SOCIETY OF MEDICINE (Dermatology Section), at 5.—Annual General Meeting.

INSTITUTION OF MINING AND METALLURGY (at Geological Society), at 5.30.—G. Rigg: Roasting and Lead-Smelting Practice at the Port Pirie (S.A.) Plant of the Broken Hill Associated Smelters Proprietary, Ltd.—Capt. H. Tatham: Tunnelling in the Sand Dunes of the Belgian Coast.

INSTITUTION OF ELECTRICAL ENGINEERS (at Institution of Civil Engineers), at 5.30 (Annual General Meeting).

OPTICAL SOCIETY, at 7.30.—B. K. Johnson: The No. 7 Dial Sight, Mk. II.—Lt.-Col. Gifford: A Short High Power Telescope.

CHEMICAL SOCIETY (Ordinary and Informal Meeting), at 8.

FRIDAY, MAY 21.

ROYAL SOCIETY OF MEDICINE (Otology Section), at 5.—Annual Genera Meeting.

WIRELESS SOCIETY OF LONDON (at Institution of Civil Engineers), at 6.—P. Coursey: Some Methods of Eliminating Atmospherics in Wireles Reception.

ROYAL SOCIETY OF MEDICINE (Electro-Therapeutics Section), at 8.30.—Annual General Meeting.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Prof. J. A. Fleming: The Thermionic Valve in Wireless Telegraphy and Telephony.

SATURDAY, MAY 22.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Frederic Harrison: The Re-action and the Critics of the Positivist School of Thought.

CONTENTS.

PAGE
The Federation of Science 317
Lord Kitchener as a Scientific Worker 319
The Nation's Food. By Dr. E. J. Russell, F.R.S. . . 320
Differential Geometry. By G. B. M. 321
A Garden in the Dunes. By G. A. J. C. 322
Our Bookshelf 323
Letters to the Editor:—
The Indian Chemical Service.—**Prof. Jocelyn Thorpe, F.R.S.; Sir Prafulla Chandra Rây** . 324
The Cost of Scientific Publications.—**Prof. W. A. Herdman, F.R.S.; Prof. H. H. Turner, F.R.S.; E. B. Knobel; Walter W. Bryant** . 326
Atomic and Molecular Forces and Crystal Structure. (*With Diagram.*)—**Dr. A. E. Oxley** 327
Wasps.—**W. F. Denning** 328
Dr. J. G. Bartholomew and the Layer System of Contour Colouring.—**Geo. G. Chisholm** 328
The Prismatic Astrolabe. (*With Diagrams.*) **By E. H. H.** 329
The Heart of a Continent. (*Illustrated.*) **By Douglas Carruthers** 330
The United States National Research Council. By Prof. Vernon Kellogg 332
Obituary:—
Marlborough R. Pryor. By Prof. T. G. Bonney, F.R.S. 333
Notes 335
Our Astronomical Column:—
Conjunction of Mars with Spica 340
The Duplicity of ν Geminorum 340
Kodaikanal Observations of Prominences 340
Leonardo da Vinci. II. By Edward McCurdy . . 340
Aeronautical Research 342
Conjoint Board of Scientific Societies 343
Agricultural Development in the West Indies . . . 344
A Simple Viscometer 344
The Chemical Society and its New By-laws . . . 344
University and Educational Intelligence 345
Societies and Academies 346
Books Received 347
Diary of Societies 347

Editorial and Publishing Offices:
MACMILLAN AND CO., LTD.,
ST. MARTIN'S STREET, LONDON, W.C.2.

Advertisements and business letters to be addressed to the Publishers.

Editorial Communications to the Editor.
Telegraphic Address: PHUSIS, LONDON
Telephone Number: GERRARD 8830.

© 1920 Nature Publishing Group